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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Andrew J. Edwards

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EXAMINER

STEVENS, THOMAS H

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/001,280	Applicant(s) EDWARDS ET AL.	
	Examiner Thomas H. Stevens	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-20 were examined.

Section I: Non-Final Rejection (2nd Office Action)

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The applied reference has a common assignee with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

3. Claim 15-19 rejected under 35 U.S.C. 102(e) as being anticipated by Edwards et al., (US Patent 6,662,356) (hereafter Edwards). Edwards teaches an application specific interface into an hierarchical intermediate representation of a heterogeneous program (abstract).

Claim 15. An application program interface (Edwards: title) embodied on a computer-readable medium for execution on a computer, the application program interface

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(Edwards: title) comprising: a first set of functions (Edwards: column 24, line 13, functions related to code) for creating a hierarchical internal representation of a heterogeneous program and for modeling the hierarchical internal representation (Edwards: table 2, intern to the software) to create a modified internal representation; and a second set of functions (Edwards: column 24, line 15, functions related to code) for dynamically modifying a system memory (Edwards: column 24, line 47) in which the heterogeneous program (Edwards: column 22, lines 45-46) is executing, the system memory (Edwards: column 24, line 47) being modified based on the modified internal representation of the program.

Claim 16. The application program interface (Edwards: title) of Claim 15, wherein the second set further includes functions for controlling processing of other programs (Edwards: column 20, lines 65-66, controls the flow) executing in the system memory (Edwards: column 24, line 47).

Claim 17. The application program interface (Edwards: title) of Claim 15, wherein the second set further includes functions for changing an execution flow (Edwards: column 20, lines 65-66, controls the flow) of the heterogeneous program.

Claim 18. The application program interface (Edwards: title) of Claim 15, further comprising a third set of functions for modifying a remote ("remote handler" Woolrath: column 12, lines 14-58) system memory (Edwards: column 24, line 47) if the

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heterogeneous program is executing in a remote ("remote handler" Woollrath: column 12, lines 14-58) system memory (Edwards: column 24, line 47) on a remote ("remote handler" Woollrath: column 12, lines 14-58) computer.

Claim 19. A computer-readable medium having computer-executable instructions stored thereon to provide an interface to a hierarchical intermediate representation (Edwards: column 24, lines 46-47) of a heterogeneous program (Edwards: column 22, lines 45-46) comprising: an instruction application interface exposed by an instruction element in the hierarchy for navigating, querying, modifying, (Edwards: column 22, lines 21-24) translating, and committing an instruction in the intermediate representation (Edwards: column 24, lines 46-47); a block application interface exposed by a block element in the hierarchy for navigating, querying, modifying (Edwards: column 22, lines 21-24), and committing a block in the intermediate representation (Edwards: column 24, lines 46-47); a procedure application interface exposed by a procedure element in the hierarchy for navigating, querying, modifying, (Edwards: column 22, lines 21-24) and committing a procedure in the intermediate representation (Edwards: column 24, lines 46-47); a program application interface (Edwards: title) exposed by a program element in the hierarchy for modifying and querying the intermediate representation (Edwards: column 24, lines 46-47) for the heterogeneous program; a system application interface exposed by a system elements in the hierarchy (Edwards: column 7, line 13) for determining the program element available on a computing device.

Claim Rejections - 35 USC § 103

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-14 and 20 are rejected under 35 U.S.C. 103 (a) as obvious by Edwards et al., (US Patent 6,662,356) in view of (Wollrath et al., (US Patent 6,237,024) hereafter Wollrath and Edwards). Wollrath and Edwards are analogous art because they both teach network-based code.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the thread schedules in Wollrath in the hierarchical intermediate representation of Edwards because Wollrath teaches systems compatible with clients on existing client-sever systems (Wollrath: column 5, lines 20-23) and allows users of the system to share services and resources over a network of many devices; (2) provides programmers with tools and programming patterns that allow development of robust, secured distributed systems; and (3) simplifies the task of administering the distributed system (Wollrath: column 5, lines 36-41).

Claim 1. A computerized system (Edwards: column 21, line 21) comprising: a processing unit (Edwards: column 21, line 23); a system memory (Edwards: column 24, line 47) (Edwards: column 24, line 42) coupled to the processing unit through a system bus; a computer-readable medium coupled to the processing unit through a system bus (Edwards: column 24, lines 44-45); a hierarchical intermediate representation (Edwards: column 24, lines 46-47)(Edwards: abstract, line 1) for a heterogeneous program (Edwards: column 22, lines 45-46) in the system memory (Edwards: column 24, line 47) (Edwards: column 24, lines 46-47); a transformation process that is configured to

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execute in the processing unit for modifying the intermediate representation (Edwards: column 24, lines 46-47) to create a modified intermediate representation (Edwards: column 24, lines 46-47) associated with the heterogeneous program; a dynamic modification ("movement between procedures" Edwards: column 7, lines 39-43) process executing in the processing unit; and an application program interface (Edwards: title) that is configured to execute executed from the computer-readable medium by the processing unit, wherein the dynamic modification ("movement between procedures" Edwards: column 7, lines 39-43) process is configured to call the application program (Edwards: column 21, lines 53-54) interface to cause the processing unit to modify the system memory (Edwards: column 24, line 47) associated with the heterogeneous programming (Edwards: column 24, lines 21-23) in the system memory (Edwards: column 24, line 47) based on the modified intermediate representation.

Claim 2. The computerized system (Edwards: column 21, line 21) of Claim 1, wherein the dynamic modification ("movement between procedures" Edwards: column 7, lines 39-43) process is further configured to call the application program (Edwards: column 21, lines 53-54) interface to cause the processing unit to suspend (Woolrath: column 3, lines 57-59) processing of other programs executing in the system memory (Edwards: column 24, line 47).

Claim 3. The computerized system (Edwards: column 21, line 21) of Claim 1, wherein the dynamic modification ("movement between procedures" Edwards: column 7, lines

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39-43) process further configured to call the application program (Edwards: column 21, lines 53-54) interface to cause the processing unit to resume (Woollrath: column 11, lines 27-28) processing of the other programs executing in the system memory (Edwards: column 24, line 47):

Claim 4. The computerized system (Edwards: column 21, line 21) of Claim 1, wherein modifying the system memory (Edwards: column 24, line 47) associated with the heterogeneous program (Edwards: column 22, lines 45-46) causes the processing unit to change execution flow of the heterogeneous program (Edwards: column 22, lines 45-46).

Claim 5. The computerized system (Edwards: column 21, line 21) of Claim 1, wherein the heterogeneous program (Edwards: column 22, lines 45-46) is configured to execute on a remote ("remote handler" Woollrath: column 12, lines 14-58) computing device with a remote ("remote handler" Woollrath: column 12, lines 14-58) system memory (Edwards: column 24, line 47), the dynamic modification ("movement between procedures" Edwards: column 7, lines 39-43) process calls the application program interface (Edwards: title) to cause a remote ("remote handler" Woollrath: column 12, lines 14-58) processing unit to modify the remote ("remote handler" Woollrath: column 12, lines 14-58) system memory (Edwards: column 24, line 47).

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Claim 6. The computerized system (Edwards: column 21, line 21) of Claim 5, wherein the dynamic modification ("movement between procedures" Edwards: column 7, lines 39-43) process further is configured to call the application program (Edwards: column 21, lines 53-54) interface to cause the remote ("remote handler" Woollrath: column 12, lines 14-58) processing unit to suspend (Woollrath: column 3, lines 57-59) processing of other running programs running in the remote ("remote handler" Woollrath: column 12, lines 14-58) system memory (Edwards: column 24, line 47).

Claim 7. The computerized system (Edwards: column 21, line 21) of Claim 5, wherein the dynamic modification ("movement between procedures" Edwards: column 7, lines 39-43) process further is configured to call application program interface (Edwards: title) to cause the remote ("remote handler" Woollrath: column 12, lines 14-58) processing unit to resume (Woollrath: column 11, lines 27-28) processing of the other programs running in the remote ("remote handler" Woollrath: column 12, lines 14-58) system memory (Edwards: column 24, line 47).

Claim 8. An application program interface (Edwards: title) embodied on a computer-readable medium for execution on a computer in controlling with a intermediate representation (Edwards: column 24, lines 46-47) of a heterogeneous program, the application program interface (Edwards: title) comprising: a navigation function (Edwards: column 21, line 48) that returns program information (Edwards: column 21, line 54) for a specified computing device; a query function (Edwards: column 24, line

27) that returns information about a program on the specified computing device; a thread management function (Wollrath: column 2, lines 62-65) for controlling execution of other programs on the specified computing device; and a modifier function (Edwards: column 24, line 30) for modeling the heterogeneous program (Edwards: column 22, lines 45-46) residing in a system memory (Edwards: column 24, line 47) on the specified computing device.

Claim 9. The application program interface (Edwards: title) of Claim 8, wherein the navigation function includes: a first program function that returns a first program on the specified computing device (first function "deletes element from main memory" table 3 Edwards).

Claim 10. The application program interface (Edwards: title) of Claim 8, wherein the query function includes a counting function that returns a number representing a count of programs executing on the specified computing device ("counts" Edwards: table 2).

Claim 11. The application program interface (Edwards: title) of Claim 8, wherein the thread (Wollrath: column 2, lines 62-65) management function includes: a suspend (Wollrath: column 3, lines 57-59) function that suspend (Wollrath: column 3, lines 57-59)s other programs from executing on the specified computing device; and a resume

(Woollrath: column 11, lines 27-28) function that resumes the execution of the other programs on the specified computing device.

Claim 12. The application program interface (Edwards: title) of Claim 8, wherein the modifier function (Edwards: column 24, line 30) includes a patch function that overwrites a portion of the system memory (Edwards: column 24, line 47) originally storing part of the heterogeneous program (Edwards: column 22, lines 45-46) with a new binary code for the heterogeneous program (Edwards: abstract lines 8-9 "new version of heterogeneous program" the program is binary in nature).

Claim 13. The application program interface of Claim 8, wherein the modifier function (Edwards: column 24, line 30) includes an injector function that writes a new binary code in a portion of the system memory (Edwards: column 24, line 47) that did not originally store an original binary code for the heterogeneous program, and that writes (Edwards: table 2) instruction in a first location of the system memory (Edwards: column 24, line 47) that stored the original binary code, the new binary code being a (Edwards: abstract lines 8-9 "new version of heterogeneous program" the program is binary in nature) modification to the original binary code and the (Edwards: table 2) instruction transferring execution to the new binary code.

Claim 14. The application program interface (Edwards: title) of Claim 8, wherein the specified computing device is a remote ("remote handler" Woollrath: column 12, lines 14-58) computing device.

Claim 20. The computer-readable medium of claim 1 comprising a remote ("remote handler" Woollrath: column 12, lines 14-58) application interface for determining the program element when the computing device is a remote ("remote handler" Woollrath: column 12, lines 14-58) computing device.

Section II: Response to Applicants' Response (1st Office Action)

102(a)

7. The declaration filed on 1/25/06 under 37 CFR 1.131 is sufficient to overcome the Vulcan reference.

Claim Objections

8. Applicants are thanked for addressing this issue. Objection is withdrawn.

9. Applicant's arguments, see pages 7-8, filed 1/25/06, with respect to the rejection of all claims under 102(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new grounds of rejection is made in view of the prior art cited within section I of this office action.

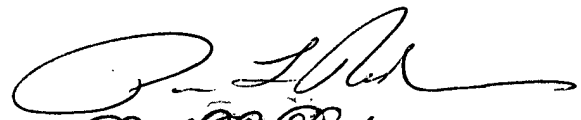
Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Tom Stevens whose telephone number is 571-272-3715, Monday-Friday (8:00 am- 4:30 pm EST).

If attempts to reach the examiner by telephone are unsuccessful, please contact examiner's supervisor Mr. Paul Rodriguez 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Answers to questions regarding access to the Private PAIR system, contact the Electronic Business Center (EBC) (toll-free (866-217-9197)).

April 15, 2006


Paul L. Rodriguez 4/17/06
Special Primary Examiner
Art Unit 2125 2123

TS